

Hit-and-Miss Engines Played Important Role on Fairbury Farms

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For: Blade newspaper
Date: March 7, 2022

Around the year 1900, most Fairbury farms had some livestock. These livestock, as well as the farm family members, required water every day. Electric water pumps could not be used to provide the water because electricity was not available to farms until the 1930s. Some farms erected a windmill which could pump water from a well if the wind was blowing. Most farmers relied on hand operated well pumps to provide water every day.

In the 1880s, the internal combustion engine was being developed. Eventually, these engines would power automobiles and farm tractors in the 20th century. Around 1890, small internal combustion engines were developed for farm use. A common operating speed for these engines was 600 RPM.

These small engines used a unique method of controlling the motor speed. Most of these small engines had a rotating ball type speed governor. There were two steel balls that moved outwards as the speed was increased. The balls were connected to a linkage shaft. If the engine speed was below the set-point, the governor linkage would allow the engine to fire normally. When the engine speed went above the set-point, the governor linkage held the exhaust valve open, preventing a vacuum in the cylinder and causing the intake valve to remain closed, thus interrupting the engine firing mechanism.

The sound made when the engine is running without a load is a distinctive "Snort POP whoosh whoosh whoosh whoosh snort POP" as the engine fires and then coasts until the speed decreases and it fires again to maintain its average speed. The snorting is caused by atmospheric intake valve used on many of these engines. This unique sound is why these engines are often called hit and miss engines.

The most popular size of these engines was the one and a half horsepower size. Hundreds of thousands of this size engine were manufactured and sold in the United States. These engines were available in larger sizes up to about 12 horsepower.

These small engines were great labor saving devices for farmers. They were used to pump water, grind feed, and saw wood. The old hand lever operated water pumps operated best at about one pumping cycle per second, or 50 RPM. Most of the small hit-n-miss engines operated at the much higher speed of 600 RPM. A method was needed to reduce the speed by a factor of 12 for pumping water. A mechanism called a pump jack was invented to solve the problem of reducing the 600 RPM motor speed down to the 50 RPM pump speed. Pump jacks used gears to reduce the speed by the 12:1 ratio needed for pumping water. The pump jacks connected to the pump rod using wooden or steel linkages.

Farmers could buy a hit-n-miss engine and a pump jack. They could bolt the pump jack onto their existing hand lever operated water pump. The farmer would remove the hand lever and connect the pump jack to the pumping rod. A flat belt connected the hit-n-miss engine to the pump jack. This set-up allowed the farmer to run the engine once or twice a day to provide drinking water to his livestock. Once electricity was finally provided to the farm, the hit-n-miss engine was replaced by an electric motor. A float switch in the water tank would automatically start and stop the electric motor to keep the livestock water tank full.

On one Fairbury farm, the hit-n-miss engine was placed in the basement of a farm house and connected to a water pump. Like any internal combustion engine, the motor produces exhaust fumes. These fumes can asphyxiate a human being. To prevent the engine from filling the house with exhaust fumes, the exhaust was piped from the hit-n-miss engine to the outdoors.

The popularity of hit-n-miss engines with farmers prompted Joseph Jesse Slagel (1883-1915) of Fairbury to invent and produce hit-n-miss engines. From the time when he was a small boy, Joseph was known as a mechanical wizard. He opened his own machine shop at the northwest corner of Sixth and Locust Streets in Fairbury. He named his company the Fairbury Motor Works and he manufactured a one and half horsepower Midget Engine.

In 1911, early Fairbury plumber C.B. Day was featured in a story in the weekly issue of the Metal Worker, Plumber, and Steam Fitter magazine. He was featured in this trade magazine because of his unique marketing method. At the Fairbury Fair, he set up displays. For the city ladies, he showed the latest in indoor plumbing items. For farmers, he demonstrated easier ways to get water for the farm. He featured water pumps powered by Midget engines from Joseph Slagel's Fairbury Motor Works.

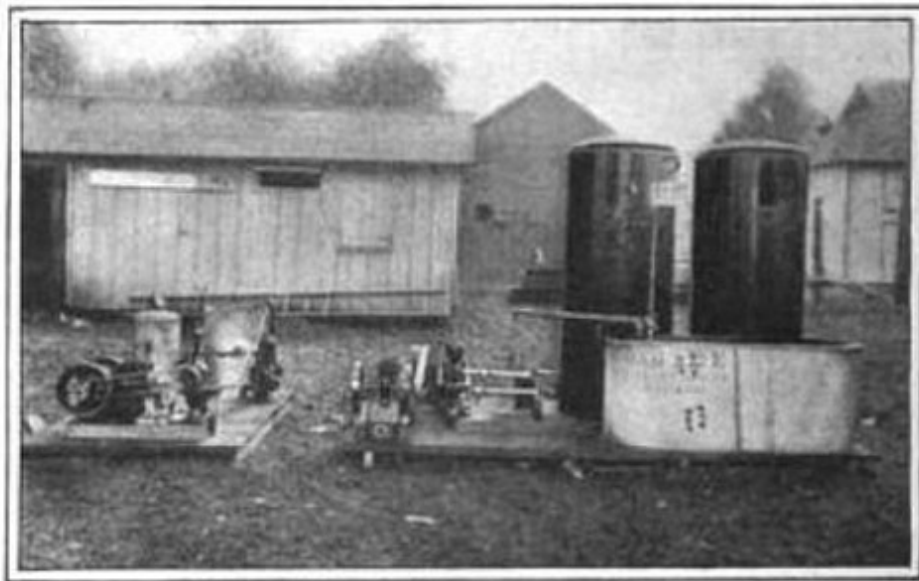
Unfortunately, in 1913 Joseph Slagel started to experience serious health issues. He sold his Fairbury machine shop and moved to New Mexico in 1914. Many early cars used acetylene gas at high pressure to power the headlights. This was called the Prestolite tank and/or generator. Joseph owned such a vehicle in New Mexico. In 1915, at the age of 32, Joseph was killed when this pressurized gas system blew up his car. Because these acetylene systems were so dangerous, they were replaced in a few years by electric lights.

At this time, it is unknown how many Midget hit-n-miss engines Joseph Slagle produced at his Fairbury Motor Works. There are five of his engines still in existence. Two are in Fairbury, one is in Strawn, one is in Indiana, and one is owned by an Iowa collector.

Unlike the extremely rare Fairbury Midget engines, there were hundreds of thousands of these hit-n-miss engines produced by other companies. In the 1910 era, the Big Four manufacturers of hit-n-miss engines were Waterloo, Fairbanks-Morse, Hercules, and International Harvester. As an example of how many of these engines were sold, between 1906 and 1923, there was a total of 330,000 Waterloo engines sold.

Thousands of out-of-use hit-n-miss engines were scrapped in the iron and steel drives of World War II—but many survived and have been restored to working order by enthusiasts. Today, one of the commonly manufactured antique hit-n-miss engines in the one and half horsepower size can be purchased for \$500 to \$1500. Each year, some of these restored engines are exhibited at the Central States Thresherman's Reunion north of Pontiac. At least two of these common antique engines have been restored by Fairbury citizens.

Hit-n-miss engines are deeply intertwined with Fairbury history. They helped Fairbury farmers to be successful in the 1890 to 1940 time period. These engines were also manufactured by Joseph Slagel's Fairbury Motor Works between 1910 and 1914.



C. B. DAY'S EXHIBIT TO CULTIVATE RURAL BUSINESS

